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IMPROVING THE QUALITY OF MINING EXPLOSIVES

- USSR -

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/Following is a translation of an article by A. A. Vovk, mining engineer, in Ugol' Ukrainy (Ukrainian Coal), No. 12, Kiev, December 1959, page 43./

In September 1959 a regular session of the Permanent Commission of the GosNTK /Gosudarstvenny Nauchno-technicheskiy Komitet -- State Scientific-Technical Committee/ of the Soviet of Ministers, Ukrainian SSR, was held in the MakNII /Makeyevskiy Nauchno-issledovatel'skiy Institut --Makeyevka Scientific Research Institute/ to discuss the introduction of safe and effective explosives and the materials and methods used in blasting. More than 60 representatives from coal mines, trusts, National Economic Councils, and scientific research and planning-sesigning organizations participated in the session. Reports and papers were read on the problems of developing and introducing more effective and safer explosives and methods for carrying out blasting work in coal industry. Drafts of the plans for scientific research of the MakNII, DonUGI DII, and UkrNIIOMShS in the field of drilling and blasing were also examined.

It was noted in the decisions of the Commission that the process of producing explosives and the methods used in blasting have a number of serious shortcomings. The majority of safe explosives (ammonite No 8, PU-2, AP-1, AP-2) are not water-resistant and can deteriorate in storage, which excludes them from further use in coal mines. Thus the development of high-safety and water-resistant explosives with a sharp increase in stability is a most important tast.

Instroduction of the short-delay method of blasting is limited by the inadequate output of EKDZ electric blasting caps, while the introduction of the MakNII water-spray curtain used in opening preparatory workings is delayed by the lack of polyethylene hose.

The commission noted that supplying the manufacturing plants with water-resistant ammonium nitrate is one of the most important measures which would make it possible to improve the quality of explosives.

The drafts of the plans for scientific research which were examined were directed essentially to the solution of urgent problems in the field of blasting work. Along with this, the Commission recommended that the UkrNIIOMShS revise its schedule of projects and include work on the industrial testing of detonators in the Donets and Krivoy Rod basins.

To improve the effectiveness and safety of blasting work in the coal mines of the Ukrainian SSR, the Permanent Commission of the GNTK /Gosudarstvennyy Nauchno-Tekhnicheskiy Komit -- State Scientific-Technical Committee/ of the Soviet of Ministers of the Ukrainian SSR recommends:

1. Beginning with the second quarter of 1960, the Gorlovka Nitrogen Fertilizer Plant is to produce water-resistant ammonium nitrate for plants that produce explosives.

2. Taking into consideration the limited assortment of safety explosives for the coal-mining industry, the interested organizations are to develop new safety explosives in accordance with the specifications of the MakNII in 1960-1961.

3. The MakNII is to carry out extensive industrial tests of waterspray curtans and explosives in polyethylene casings filled with water in coal mines.

The manufacturing plant is to accelerate the production of EDKZ caps with a delay component based on crystallized silicon with delay periods recommended by the MakNII (35-70-110 milliseconds). The plant is working jointly with the MakNII to complete the development of EDKZ caps which will be safe in methane explosions, ensuring the production of experimental lots of such electric blasting caps, and, beginning in 1960, to master their mass production.

4. In the first half of 1960, the Stalinsk and the Lugansk National Economic Councils are to carry out extensive industrial tests of new high-safety explosives -- equivalent (E-6) and those in compression casings (metanit No 4), and also plastic and semiplastic explosives made of 35% dynamite and VP-type safety pobedit on exchange salts, in order to establish the expediency of their mass production. In 1960 they are also to produce experimental lots of a new pobedit, to be known as VP-1 pobédit, made of water-resistant iron-coated ammonium nitrate with sawdust added.

5. The Gosplan /State Planning Commission/ of the Ukrainian SSR is to examine the problem of supplying the manufacturing plants with plastic materials for packing safety explosives beginning in 1960.

The Commission adopted a number of recommendations to the Gosgortekhnadzor of the Ukrainian SSR and the MakNII regarding the transportation and storage of explosives, quality control tests of mass lots, permits for using new types of explosives, and others.

In addition, it was acknowledged as expedient to manufacture (in the first half of 1960) experimental lots of thyratron pulse devices designed by the MakNII for determinging the ignition pulses of electric blasting caps.

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